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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,858	05/27/2005	Luigi Resconi	FE 6071 (US)	4410

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BASELL USA INC.
INTELLECTUAL PROPERTY
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EXAMINER

LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 05/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/536,858	Applicant(s) RESONI ET AL.	
	Examiner Rip A. Lee	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen *et al.* (U.S. 6,084,115).

Chen *et al.* discloses a series of Me₂Si bridged group 4 diene complexes containing the polycyclic indacenyl and tetrahydro tetramethyl benzo[f]indenyl ligands shown in column 5. A specific example of the latter is shown in example 14. The example shows the unexceptional and well-established process of reacting polycyclic ligand with base followed by reaction of the corresponding anion with Me₂SiCl₂ to form the bridged *bis*(benzoindenyl) ligand. Subsequent ligation to the metal completes the synthesis of the metal complex. There are no examples that show the preparation of the corresponding bridged *bis*(indacenyl) ligand and metal complex.

One of ordinary skill in the art would be motivated to make and use the class of Me₂Si bridged *bis*(indacenyl) complexes because Chen *et al.* teaches this class of compound as a useful

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embodiment of the invention, Although there is no specific example of how to make such compounds one of ordinary skill in the art would have found it obvious merely to follow the synthetic steps of example 14 in order to make the *bis*(indacenyl) ligand and corresponding metal complex taught in the invention. And because Chen *et al.* teaches the class of indacenyl complexes as part of the invention, one of ordinary skill in the art would have expected such a process to work. Claim 10 differs from claim 11 in the sequence of addition of ligands to bridging group. One of ordinary skill in the art would have found it obvious to arrive at the subject matter of claim 10 since this is an obvious variation of example 14. Moreover, it is well established that it is *prima facie* obvious to change the sequence of addition of ingredients and to add ingredients simultaneously or sequentially. *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930).

4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen *et al.* (U.S. 6,084,115).

The discussion of the disclosures of the prior art of Chen *et al.* from the previous paragraph of this office action is incorporated here by reference. The bridged *bis*(benzoindenyl) and *bis*(indacenyl) metal complexes of the invention are useful catalyst components. Catalyst activators include the series of aluminoxanes and trialkylaluminum compounds which are well-established in the art (col. 10, lines 42-68). The resulting catalyst is used for polymerization of olefins, and according to the inventors, the catalysts are employed in a process for polymerizing ethylenically unsaturated monomers such as 1-butene (col. 16, line 55). Although the reference does not show an example of use of the novel catalysts for polymerizing 1-butene, one of ordinary skill in the art would have found it obvious to use the catalysts in a process of polymerizing 1-butene because Chen *et al.* contemplates such a process. Since this is an embodiment of the invention, one of ordinary skill in the art would have expected such an process to work.

Prior Art

5. The prior art made of record but not relied upon is considered pertinent to the Applicant's disclosure.

Fritze *et al.* (U.S. 6,124,231) relates to catalyst compositions containing novel, non-aluminoxane co-catalysts. The patent discloses the compound $\text{Me}_2\text{Si}(2\text{-Me-5,6-benzindenyl})_2\text{ZrMe}_2$ as one of many possible metal components for making catalysts of the invention. One of ordinary skill in the art would not have found it obvious to arrive at the process of the instant claims because there is no motivation to replace the non-aluminoxane co-catalysts, which is the special feature of the invention, with aluminoxane. It is less obvious to select this particular benzindenyl complex (it is the only 5,6-benzindenyl compound listed among many 4,5-benzindenyl compounds) and to use it in a process for polymerizing 1-butene, based on the general teachings of Fritze *et al.*

Hashimoto *et al.* (U.S. 6,156,844) discloses a series of substituted, Me_2Si -bridged, *bis*(benzo[f]indenyl) zirconium dichlorides as catalyst components for polymerization of propylene. Not more than 10 mole % of comonomer may be used in making polypropylene. The reference does not teach the process of the instant claims, and one of ordinary skill in the art would not have found it obvious to modify the invention to make a polymer of 1-butene.

Arai *et al.* (U.S. 6,329,479) discloses a process for making aromaticvinyl compound-olefin copolymer using catalysts comprising Me_2Si -bridged, *bis*(benzo[f]indenyl) zirconium dichlorides. Clearly, the reference does not teach the process of the instant claims.

Resconi *et al.* discloses the compound ethylene(2-Me-5,6-cyclotetramethylene-4-indenyl) $_2\text{ZrCl}_2$. Here, the annelated ring is an unsaturated six-membered ring in the requisite 5,6-position, however, the bridging group lies in the 4-position rather than the 2-position.

Ernst *et al.* discloses unbridged zirconocenes containing the tetrahydro tetramethyl benzo[f]indenyl ligand.

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Comments on prior art cited in the international search report for WO 2004/050724: Rohrmann *et al.* (EP 549 900) and Suhm *et al.* (*J. Mol. Catal., A*, 1998) were cited as "X" references. Having reviewed these documents, the examiner disagrees with the opinion of the search report. The European patent teaches compounds containing benzo[e]indenyl (4,5-benzoindenyl) ligands, which are structural isomers of those of the instant claims. The journal article does not disclose benzannelated ligands at all. In conclusion, the instant claims do not appear to be anticipated by these references.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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May 18, 2006


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